CLAIMS

Having thus described the invention, what is claimed is:

1. A pipe bending machine comprising:

(a) a machine base (2);

(b) a bending tool (3) mounted on the machine base (2);

(c) a pipe feed unit (9) on the machine base (2) by which a pipe (6, 6a) to be bent can be advanced to the bending tool (3) in the longitudinal direction (12) of the pipe, the pipe feed unit including a pipe holder (8) that is guided in the longitudinal pipe direction (12) by a linear guide system (16) on the machine base (2) and a pipe feed driven by a drive system (15) provided on the machine base;

(d) a mandrel bar (20,20a) extending in the longitudinal direction of the pipe (6); and

(e) a mandrel retractor (19) on the machine base (2) with a bending mandrel (21) mounted at the bending tool end of the mandrel bar (20, 20a) can be moved back and forth between a working position and a retracted position, said mandrel retractor (19) including a mandrel bar support (24) which in the longitudinal pipe direction (12) is guided by a linear guide system (16) on the machine base and can be moved by a mandrel bar drive operated by a drive system (15) on the machine base (2), the mandrel bar support (24) and the pipe holder (8) being movable by one common linear guide system (16) on the machine base and/or one common drive system (15) on the machine base is/are provided.

2. The pipe bending machine in accordance with Claim 1 wherein a common linear guide system (16) for the mandrel bar support (24) and pipe holder (8) includes at least one guide rail (17).

3. The pipe bending machine in accordance with Claim 1 wherein the mandrel bar drive and the pipe feed drive employ rack-and-pinion drives and that the common drive system (15) on the machine base for moving the mandrel bar support (24) and pipe holder (8) includes at least one rack that meshes with at least one pinion (26) on the mandrel bar support and with at least one pinion (14) on the pipe holder.

4. The pipe bending machine in accordance with Claim 1 wherein the mandrel bar support (24) and the pipe holder (8) are respectively attached to a carriage (23, 10) or slide guided by a common linear guide system (16) on the machine base and/or driven by the common drive system (15) on the machine base.

5. The pipe bending machine in accordance with Claim 1 wherein the mandrel bar support (24) is driven by means of a mandrel bar drive including at least one electric motor (22) on the mandrel bar.

6. The pipe bending machine in accordance with Claim 1 wherein the mandrel bar support (24) and the pipe holder pipe holder (8) is driven by means of a pipe feed drive unit including at least one electric motor (11) on the pipe holder as part of a common drive system (15) on the machine base.

7. The pipe bending machine in accordance with Claim 1 wherein the mandrel bar support (24) and the pipe holder (8) can be driven by means of a numerically controlled mandrel bar drive unit and a numerically controlled pipe feed drive unit as part of a common drive system (15) on the machine base.

8. The pipe bending machine in accordance with Claim 1 wherein the mandrel bar (20, 20a) on the mandrel bar support (24) is interchangeable.

9. A pipe bending machine comprising:

(a) a machine base (2);

(b) a bending tool (3) mounted on the machine base (2);

(c) a pipe feed unit (9) on the machine base (2) by which a pipe (6, 6a) to be bent can be advanced to the bending tool (3) in the longitudinal direction (12) of the pipe, the pipe feed unit including a pipe holder (8) that is guided in the longitudinal pipe direction (12) by a linear guide system (16) on the machine base (2) and a pipe feed driven by a drive system (15) provided on the machine base;

(d) a mandrel bar (20,20a) extending in the longitudinal direction of the pipe (6);

(e) a mandrel retractor (19) on the machine base (2) with a bending mandrel (21) mounted at the bending tool end of the mandrel bar (20, 20a) can be moved back and forth between a working position and a retracted position, said mandrel retractor (19) including a mandrel bar support (24) which in the longitudinal pipe direction (12) is guided by a linear guide system (16) on the machine base and can be moved by a mandrel bar drive operated by a drive system (15) on the machine base (2), the mandrel bar support (24) and the pipe holder (8) being movable by one common linear guide system (16) on the machine base and/or one common drive system (15) on the machine base is/are provided, said common linear guide system (16) for the mandrel bar support (24) and pipe holder (8) includes at least one guide rail (17), said mandrel bar drive and the pipe feed drive employing rack-and-pinion drives, said common drive system (15) on the machine base for moving the mandrel bar support (24) and pipe holder (8) includes at least one rack that meshes with at least one pinion (26) on the mandrel bar support and with at least one pinion (14) on the pipe holder, and wherein said mandrel bar support (24) and the pipe holder (8) can be driven by means of a numerically controlled mandrel bar drive unit and a numerically controlled pipe feed drive unit as part of a common drive system (15) on the machine base.

10. The pipe bending machine in accordance with Claim 9 wherein the mandrel bar support (24) and the pipe holder (8) are respectively attached to a carriage (23, 10) or slide guided by a common linear guide system (16) on the machine base and/or driven by the common drive system (15) on the machine base.